

CLAIMS

What is claimed is:

1. A motor control apparatus supplying braking power for braking a motor, comprising:
 - a braking power providing unit to receive an input voltage lower than a braking voltage and to boost the input voltage to the braking voltage to brake the motor;
 - a switching unit closing to allow the braking power providing unit to store input power and opening to allow the braking power providing unit to output braking power by boosting the input voltage and a stored voltage to the braking voltage; and
 - a controller to control the switching unit to close and to open.
2. The motor control apparatus according to claim 1, further comprising:
 - a power supply to supply power to the controller, wherein the power from the power supply is used as the input power to be supplied to the braking power providing unit.
3. The motor control apparatus according to claim 2, wherein the braking power providing unit comprises:
 - an inductor to store the input power from the power supply, as a stored power; and
 - a condenser to output the input power and the stored power of the inductor as the braking power, when the switching unit is opened.
4. The motor control apparatus according to claim 3, wherein the switching unit is connected to opposite ends of the condenser.
5. The motor control apparatus according to claim 3, wherein the switching unit is a field effect transistor having a gate terminal connected to the controller, and drain and source terminals, respectively, connected to opposite ends of the condenser.
6. The motor control apparatus according to claim 3, further comprising:

a diode having an anode connected to the inductor and a cathode connected to the condenser, and preventing a voltage spike, generated when the condenser is disconnected from the motor, from being supplied to the inductor.

7. The motor control apparatus according to claim 5, wherein:
 - the controller outputs a boost signal having a predetermined duty cycle and a braking signal to brake the motor; and
 - the motor control apparatus further comprises
 - an AND circuit part performing an AND operation between the boost signal and the braking signal which are outputted from the controller, and outputting a logical value to the gate terminal of the field effect transistor.

8. The motor control apparatus according to claim 5, wherein the drain and source terminals of the field effect transistor are selectively connected according to a control signal, which is outputted from the controller to the gate terminal of the field effect transistor.

9. The motor control apparatus according to claim 5, wherein the field effect transistor is turned on/off in response to a duty cycle of a braking signal.

10. The motor control apparatus according to claim 7, wherein the AND circuit part comprises:
 - an AND gate, which outputs a logical signal having a first level only when both the boost signal and the braking signal have first logical values, and otherwise outputs the logical signal having a second level.

11. The motor control apparatus according to claim 10, wherein the field effect transistor is turned off when the AND gate outputs the logical signal having the first level and is turned on when the AND gate outputs the logical signal having the second level.

12. The motor control apparatus according to claim 1, further comprising:
 - an inverter having transistors to selectively turn on/off to supply three-phase AC power to the motor, wherein the controller controls the inverter.

13. The motor control apparatus according to claim 2, wherein the controller operates by a voltage of 5 volts supplied from the power supply.

14. The motor control apparatus according to claim 1, wherein the switching unit comprises:

a transistor or a relay.

15. The motor control apparatus according to claim 1, further comprising: an inverter having transistors to selectively turn on/off to supply three-phase AC power to the motor, wherein the controller comprises:

an inverter controller to control transistors of the inverter; and
a braking controller to control the switching unit.

16. A motor control apparatus supplying braking power for braking a motor, comprising:

a braking power providing unit to receive an input voltage lower than a braking voltage and to boost the input voltage to the braking voltage to brake the motor;

a switching unit selectively closing and opening to control the braking power providing unit to store input power and to output braking power by boosting the input voltage and a stored voltage to the braking voltage.

17. A motor control apparatus supplying braking power to a braking power providing unit for braking a motor, comprising:

a controller to control the braking power providing unit to brake the motor and to store input power, as stored power, to supplement the power to the braking power providing unit when braking the motor; and

a power supply to supply power to the controller such that, when braking the motor, the input power from the power supply is supplemented by the stored power from the controller and supplied to the braking power providing unit.